1.9
P69P

LIBRARY
RECEIVED
★ AUG 4 1931 ★
U. S. Department of Agriculture

THE PLANT DISEASE REPORTER

Issued By

Division of Mycology and Disease Survey

Volume XV Number 9

July 31, 1931

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE PLANT DISEASE REPORTER

Issued by

THE PLANT DISEASE SURVEY

OFFICE OF MYCOLOGY AND DISEASE SURVEY

Vol. XV August 1, 1931 Number 9

DISEASES CAUSED BY NEMATODES

TWO INTERESTING FINDINGS OF TYLENCHUS DIPSACI, THE BULB OR STEM NEMA

By G. Steiner, Senior Nematologist, Division of Nematology

Plantago maritima is to be added to the host list of Tylenchus dipsaci for this country. Infested plants were discovered by Mr. F. D. Bailey and Mr. Frank P. McWhorter of Corvallis, Oregon, and sent in for verification of their determination. Plantago maritima is particularly interesting as a host plant of this nema because, according to Hodson, it harbors a population which transfers to narcissus. Of course the present population may behave quite differently from the one with which Hodson worked. In his case the parasites may originally have come from diseased narcissus bulbs dumped at the shore line where he collected affected Plantago maritima.

Onion plants from Canastota, Madison County, New York, referred to the writer by the Plant Disease Survey, were found to be heavily infested with Tylenchus dipsaci. These plants had been collected by A. P. Fisher, Secretary of the Madison County Vegetable Growers Association, and sent to Dr. Charles Chupp of Cornell University, who, in turn, transmitted them to the Survey. Onions have long been known to be attacked by this nemic pect, in fact,

Chatin wrote a monograph on this matter as early as 1884. The present case, as far as we know, seems to the first authentic report on this host for the United States. (McKay, however, in Oregon Agr. Exp. Sta. Crop Pest and Hort. Rept. 3: 139-145. 1921, lists onion as one of the hosts on which the nema had been found in this country.) The disease had been observed a few times on onions from ship stores but it had not yet been seen on plants grown here. Its absence on onions in this country was rather remarkable, since transfer experiments from narcissus to onions made in Washington were always successful.

The disease is very detrimental to the onion, the bulb, stem, leaves, flowers, and seeds being infested. The storage of onion bulbs in no way stops the development of the nemas. Seeds may be infested inside as well as outside and are one of the main means of distribution, besides the bulbs and seedling plants.

DISEASES OF SPECIAL CROPS

REPORTS OF TOBACCO SEED BED SURVEYS

PENNSYLVANIA

W. S. Beach

A survey of tobacco seed beds in Lancaster County was made between May 27 and June 4, during the period when transplanting was largely in progress. Approximately 90,000 square feet of beds on 72 farms were examined. On June 20 18,000 square feet of beds on 16 farms in Clinton County were inspected.

All the inspected seed beds had been steam sterilized except on eight farms where no form of sterilization was employed. Only four farms used glass covers entirely, while five had part glass and part cloth. Nearly all the rest used cloth except a few in Clinton County where pine branches are laid over the beds for early protection. Somewhat less than three-fourths of the growers used board frames, the balance having no frames. The permanent frames are found to be an obstacle to thorough steam sterilization as a narrow margin of soil against the boards is commonly not heated sufficiently. Much greater care in sterilizing frames is thus required, and taking up the boards for this purpose gives the greatest assurance of effectiveness.

Wildfire (Bacterium tabacum) was found to be somewhat more severe than in 1930. The first reports of it were received May 20. Whereas last year 25 per cent of the farms showed at least some trace of seedling infection and 9 per cent of the seed bed area considered as a whole was affected, this year 33 per cent of the farms showed the disease and 12 per cent of the seed bed area was affected. In Clinton County but three minor cases of wildfire were noted. More rainy weather this season favored the wider spread of areas of disease. The increase in the number of farms this year does not necessarily indicate new cases, as the past dry years may have suppressed development to such a degree that they were not noticed previously.

The conditions in Pennsylvania that have favored the persistence of wildfire despite two dry years that virtually prevented development in the field appear to be the permanent location of most seed beds and the presence of numerous small growers ignorant of effective control measures or indifferent to putting them into practice. During these two years the organism appears, in nearly all cases, to have lived over in old cloth, on old frames, or elsewhere on the seed bed site. Old cloth is indicated by early uniform infection of wide areas of bed, while appearance in limited areas points more to the frames or aisles as the source, especially frequent reappearance at the same place as in the previous year. There has been little recent data indicating contamination from seed or barns, although this may not be impossible.

Results from the application of Bordeaux mixture were satisfactory only when thorough spraying was done prior to any trace of seedling spotting. A consideration of the spring weather indicates that spraying should have been started the last week in April. Tests have shown that the application of Bordeaux as soon as the seedlings have become rooted is safe and gives much greater assurance of disease prevention.

Mosaic (virus) appears to be rare or inconspicuous in Pennsylvania seed beds, and careful scrutiny is necessary to discover it. This may be due to the fact that tobacco seedling growth is considerably earlier than that of most weed carriers, also to the use of more or less tight seed bed covers, to sterilization, and to the small need of working in the beds before transplanting. From this time on there may be considerable contamination.

Other diseases. The only other noteworthy foliage disease was a considerable amount of spotting upon a planting of Nicotiana rustica at Lock Haven, Clinton County, which was found to be caused by Macrosporium longipes. No evidence of the downy mildew (Peronospora hyoscyami was found or reported. Three cases of black root

rot (Thielavia basicola) were found in Clinton County, two being on unsterilized beds. Small centers of damping-off were usually caused by Rhizoctonia solani. On two farms damping-off caused by Sclerotinia sclerotiorum was found. In both instances the seed bed soil had been devoted to the growth of garden crops such as celery, cabbage, and lettuce following the season of transplanting tobacco. Several cases of uneven stands with the presence of barren or thin areas were associated with improper mixing of commercial fertilizers with seed bed soil, especially with cotton seed meal applied after steaming. Fusarium spp. were commonly found upon the roots of seedlings thus injured. The occurrence of Fusarium affine as reported by Slagg in tobacco seed beds is not uncommon in Pennsylvania, but the fungus does no particular harm.

KENTUCKY

W. D. Valleau, E. M. Johnson, and Russell A. Hunt

A survey of tobacco plant beds was made during the latter part of May and early June in parts of Christian, Todd, Logan, Simpson, and Warren counties in western Kentucky, and in Jessamine, Clark, Montgomery, Scott, and Fayette counties in central Kentucky. The former counties are in the dark tobacco section of the State where the growing of Burley tobacco has only recently been introduced. The latter counties are in the Burley district.

Cold weather injury. The season was late, due to cool weather. Most of the beds showed the pinched, chlorotic leaves of the growing point which appear to result from injury to the young chloroplasts during a cool, windy period. These plants later partially recovered, taking on a somewhat mottled appearance, suggestive of a mild type of mosaic, in the chlorotic leaves. The pinched leaves frequently did not regain normal shape.

Angular-leaf-spot. (Bacterium angulatum). In the 165 beds of dark tobacco, every bed, with one exception, was found to be free from angular-leaf-spot, whereas in 75 of 99 Burley beds examined the disease was present but not to the extent that damage resulted. This difference in resistance of dark tobacco as compared with Burley had been noted previously in a series of small Burley beds adjacent to a series of dark tobacco beds. All of the Burley beds were affected, while diseased plants were found in but two of the dark beds, even though the leaves of the two varieties were sometimes in contact. No satisfactory explanation of the general presence of angular-leaf-spot in Burley beds has so far been found. Beds on the Experiment

Farm were entirely free from this disease, so far as could be determined through observation, for the first time in at least 10 years. They were all well ditched to prevent flooding during heavy rains.

Wild-fire (Bacterium tabacum). Specimens of this disease were received from Calloway County where it destroyed one bed of plants, another from the same seed being entirely free. It was reported as worse on Burley than on dark tobacco. Three adjacent beds of Burley were found in Jessamine County heavily infested with wild-fire and angular-leaf-spot, while a fourth, closely boxed, was free from both diseases. There was a strong suspicion that the three beds had become contaminated from washing water. The seed used in these beds was known to be 2 years old. Seed from the same bag had been used extensively the previous year on Boys' Club projects, but no reports of wild-fire were received.

Black root-rot (Thielaviopsis basicola). Root-rot was found in spots in ten 5-year-old beds on one farm in Christian County. They appeared to be free in 1930 when inspected. Root-rot was found in 9 beds in adjoining fields in Montgomery County. Tobacco had not been grown for 20 years in these areas except in one small area which was used 7 years ago for a bed. Since tobacco has been set, several beds have been observed in which No. 5 Burley, a new root-rot resistant variety, was being tested in comparison with one of the susceptible varieties and in which No. 5 was larger and greener, indicating that root-rot was present in the lower layers of soil in these beds.

Mosaic (virus). Inspections made at first pulling or before resulted in finding mosaic in but two beds. These were on the same farm, ground tobacco stalks had been used on the beds as fertilizer and the men who weeded chewed barn-cured tobacco. Inspections since setting time have revealed mosaic in several beds. In all cases observed the disease could have originated in barn-cured tobacco which the men chewed while pulling. In one instance where as many as 60 mosaic plants were found in several small areas in a series of large beds, the disease could have originated in chewing tobacco used while weeding or pulling, or in infected horsenettles which were present in the bed.

Ringspot (virus). Two types of ringspot, both of which we know to be seed transmitted, were found in plant beds. One of these is the ordinary ringspot, which we now call green ringspot, and the other yellow ringspot. Occasional plants of the former were found on several occasions in plant beds on the Station farm and elsewhere. About 14 plants of the latter were found in one bed on the Station

farm, sowed from a yellow ringspot plant. The seedlings became yellow a few days after germination and from then on grew very slowly.

Black leg (Bacillus aroideae and B. carotovorus) was of little or no importance this year. It was found in one bed on the Station farm and had killed a few areas of plants about 2 feet in diameter in another bed in Fayette County.

Sodium nitrate was applied dry by several growers in western Kentucky, nearly destroying large beds of plants.

SOUTHERN INDIANA

R. W. Samson

On May 26, 27, and 28, a seed bed survey for tobacco diseases was made in representative sections of southern Indiana, chiefly in Spencer and Floyd counties. Approximately 35 beds were examined on about 20 different farms.

In general the 1931 spring season was much more favorable for tobacco seed beds than the 1930 season. Fewer beds were total failures and there was an abundance of plants for setting. Cool weather in early May slowed up the growth of the plants but this was not serious. At the time of the survey a considerable acreage had been set.

Many beds were too heavily seeded, with a resultant crowded stand of small plants. The usual rate of seeding appeared to be a teaspoonful of seed to each 100 square feet. In addition to the heavy seeding most beds had areas in them of small yellowed plants that would not develop far enough to set in the field. This condition seemed to be due mostly to a lack of uniform seed-bed preparation. Sometimes inadequate cloth protection was responsible. Wherever the beds were narrow, i.e., 6 to 9 feet instead of the frequent 12 feet, and care had been taken to keep the frames tight and the cloth well stretched and supported the plants were much more uniform.

No virus diseases were observed on tobacco plants in any beds. In many cases, where the beds were located in woods, there were numerous clumps of mosaic-diseased pokeweed about. In several beds, also, potato plants were observed serving as a support for the bed cloth. Careful examination of the tobacco plants around these potato plants revealed none showing symptoms of any potato virus infection. These beds were carefully noted with the expect-

ation of observing the plants in the field later on to see if any evidence of potato virus infection can be observed.

WISCONSIN

James Johnson

Tobacco seed-beds were sown relatively early and under weather conditions favorable for their preparation. A large percentage of the beds showed a poor stand of plants, however, apparently as a consequence of "drying-out" during a short period of hot, dry weather soon after sowing. This, together with some unfavorable conditions for transplanting in late June, resulted in some field planting up to July 8, although the greater part of the crop was planted before June 20.

Weather conditions were on the whole comparatively unfavorable for the occurrence of diseases in the seed-beds. Nevertheless, angular leaf-spot (Bacterium angulatum) infections were very generally present, although not as heavy as in some years. It is estimated that fully one-half of the plant beds in the southern district showed the disease. Wildfire (Bacterium tabacum) infections are known to exist on only about twelve farms. No definite mosaic was observed in the seed-beds.

Damping-off, usually occurring only very rarely in Wisconsin on account of the general practice of soil steaming, was somewhat more common than usual. Growers very generally are reducing the length of time of steaming to 15 or 20 minutes, and this probably accounts for the increased occurrence of damping-off fungi in the seed-bed soil.

TOBACCO ANGULAR LEAF SPOT IN VIRGINIA SEED BEDS

In Pittsylvania County three beds were observed with slight angular leaf spot (Bacterium angulatum) infection, in Patrick County, two beds. In Washington County infection was general. Only a few growers treated seed or had seed treated. Many growers bought seed that was supposed to have been treated from the local merchants. However, angular leaf spot appeared in the majority of beds sown with such seed. Where seed treatment was practiced with the other precautionary plant bed control measures, the development of angular leaf spot was prevented. No wildfire (Bacterium tabacum) was observed in these counties. (James Godkin, July 15).

COTTON ROOT ROT IN TEXAS

Cotton root rot (Phymatotrichum omnivorum) is making its appearance in Brazos County rather early this year. The disease first showed up during the week of June 12 and is gradually spreading. Because of the lateness of the cotton crop, root-rot this year is attacking much younger plants than is usually the case. (J. J. Taubenhaus, June 25).

F R U I T D I S E A S E S

FRUIT DISEASES IN VIRGINIA

Reported by A. B. Groves, (July 15).

APPLE: Scab (Venturia inaequalis) is much more prevalent in Virginia this season than last, although damage is not severe in any other than poorly cared for orchards. The disease is not as prevalent in northern Virginia as in some other sections.

Blight (Bacillus amylovorus) has been quite severe on both apples and pears in many orchards in Virginia, damage generally being more severe on the younger plantings. Bearing commercial orchards have not suffered except in a few instances. There was very little blossom blight, and twig blight did not become prevalent in this section until some time afterwards.

Powdery mildew (Podosphaera leucotricha) has been much less severe on young Jonathan trees this season than last. The Jonathan is the only variety of importance commonly affected with the disease in Virginia. The disease has been readily controlled and there are few secondary infections, although there were many diseased shoots produced from infected buds.

Blotch (Phyllosticta solitaria). The first occurrence of blotch on apples was noted on June 22. Two neglected trees were severely affected.

PEACH; Yellows. A severe case of peach yellows in an old home orchard near Winchester was called to the writer's attention

by an orchardist recently. This is the first case of yellows observed here this year.

FRUIT DISEASES IN MICHIGAN

Reported by Donald Cation, (July 1).

APPLE: Scab (Venturia inaequalis). Old leaves were received from cooperating growers twice weekly during April and May. Perithecia were scarce on most of the samples but when found at all they were usually abundant. Mature spores found as follows:- Fenneville, Allegan Co., April 14; South Haven, Van Buren Co., May 4; Bellaire, Antrim Co., Mears, Oceana Co., and Beulah, Benzie Co., May 11. First visible infection at East Lansing observed May 22.

Frequent rains during May and June were favorable for severe scab infection. Unsprayed trees generally are badly scabbed on leaves and fruit.

PEAR: Scab (Venturia pyrina). Unsprayed pear trees in Berrien County examined by the writer on June 15 showed no scab. Severely scabbed pear leaves and fruits were received from Mason County on June 22.

PEACH: Leaf curl (Exoascus deformans) was generally severe on unsprayed trees. This was unexpected because of the absence of curl last year and the extremely dry conditions in the early spring.

Blight (Coryneum beijerinckii). "California blight" reached serious proportions in the Fenton district last year and was discovered too late for effective control. Under the direction of Dr. J. H. Muncie, a fall spray of Bordeaux 8-8-50 gave complete control. The usual spring dormant lime-sulfur 1-10 gave very little control. Early and Late Crawfords are very susceptible. Elberta is fairly resistant.

CHERRY: Leaf curl (Exoascus sp.) One specimen of cherry leaves showing curl and typical Taphrina (Exoascus) asci was received from Mecosta County.

PLUM: Pockets (Exoascus pruni). Bladder plums have been received for determination from middle and northern counties. The writer has not found this disease locally.

BROWN ROT OF PLUM (SCLEROTINIA FRUCTICOLA)

GEORGIA: Several trees of Prunus angustifolia in cultivation around a house were filled with fruit and none had brown rot, although several very large trees of Japanese plums nearby showed 50 per cent infection of the fruit. (J. H. Miller, June 22).

TEXAS: Due to the recent prevailing dry weather, brown-rot has not caused very serious damage, but now and then several fruits on a tree are found to be affected by the disease. On many such trees old mummies from last year's crop were still found clinging to the trees.

OTHER REPORTS ON FRUIT DISEASES

MULBERRY: Popcorn disease (Sclerotinia carunculoides) in Georgia. All fruits were affected on several trees one mile southeast of Nashville. This is a new station for Georgia. The disease was previously found at Louisville. (J. H. Miller, June 22).

STRAWBERRY: Botrytis sp. in Maine. More complaints (with specimens) this spring than is usual, and more than of other strawberry troubles. In two instances, one being in my own garden, the use of a winter mulch was correlated with the presence of the disease. Petioles, leaf blades, fruit stems, and fruits affected. (Donald Folsom, July 20).

D I S E A S E S O F V E G E T A B L E S

BACTERIAL CANKER OF TOMATO IN NORTH CAROLINA

Tomato fruits showing bacterial spots were received from R. F. Poole July 5. Miss Mary K. Bryan identified the organism as Aplanobacter michiganense, the cause of bacterial canker. This is the first report of the disease for North Carolina.

VEGETABLE DISEASES IN GEORGIA

Reported by J. H. Miller

SNAP BEAN: Bountiful variety. In a one-acre field 30 per cent of the stems were attacked by Macrophoma phaseoli, in two other fields 5 per cent of the plants were dead or dying. A few rows in one field planted next to Fordhook limas showed 10 per cent of the pods affected by halo blight (Bacterium medicaginis phaseolicola). Five per cent of the plants in one home garden were killed by Sclerotium rolfsii. (June 23-24).

TOMATO: Seventy to 80 per cent of the fruits were affected by blossom-end rot in one two-acre planting. In two small home garden patches 20 per cent loss was estimated. In one field 20 per cent, in another 10 per cent of the plants were killed by Fusarium wilt (F. lycopersici). Ten per cent of the plants were dead in a two-acre field in which the mycelium and sclerotia of Sclerotium rolfsii were found on roots six inches underground. (June 23-24).

WATERMELON: Wilt (Mycosphaerella citrullina). In an eight-acre field near Tifton 30 per cent of the plants were dead or dying. Attack on nodes near main stem, with black gummy exudate. (June 24).

CARROT: Southern blight (Sclerotium rolfsii). Forty per cent of the carrots rotten in a one-acre field, sclerotia and mycelium abundant on carrots and soil around them. Twenty per cent loss from rotted carrots and dead plants in a quarter-acre field. Sclerotia plainly visible on carrots and in soil. (June 21).

MARKET PATHOLOGY

NEW YORK MARKET PATHOLOGY NOTES

by Cyril O. Bratley

CHERRIES: During late June and early July the sweet cherries from Oregon, Washington, and Idaho showed considerable cracking.

Such cracking was apparently brought on by the heavy rains which occurred throughout the Northwest and which followed an extended period of drought. When the cherries arrived on the market practically all of the cracks were invaded by decay producing organisms. The most prevalent organism was a species of Cladosporium which caused a firm, slowly enlarging decay. The white tufted aerial mycelium detracted appreciably from the appearance and marketability of the pack.

CALIFORNIA GRAPES: The table grapes from California have been arriving in consistently good condition. Blemishes appearing occasionally were sunburn and yellowing of the berry.

PEACHES FROM GEORGIA: There has been less decay in peaches from Georgia than the average for the past few years. This is no doubt due in part to the extreme drought in that state during June and early July.

ONIONS FROM TEXAS: Several cargoes of onions from Texas were examined in late June. Some lots contained as much as 25 per cent decay. Black Mold Rot (Aspergillus niger) was the cause of the greatest loss. Bacterial Soft Rots (Bacillus sp.) were general throughout the shipments.

DISEASES OF TREES AND ORNAMENTALS

JAPANESE CREEPER (AMPELOPSIS TRICUSPIDATA): First record of the occurrence of Guignardia bidwellii on this host in Maine, causing leaf spot. Gray mold blight (Botrytis sp.), also in Maine, destroying petioles and advancing rapidly into leaf blades. (Donald Folsom, July 20).

CRAPEMYRTLE: Powdery mildew (Oidium sp.) in Texas. This disease is now attacking crapemyrtles in epidemic form, causing the affected shrubs to take on a white, powdery appearance. The disease is worse on shrubs which grow in clumps or where they are planted in somewhat shaded areas.

PHLOX: Powdery mildew (Erysiphe cichoracearum) in Virginia. Powdery mildew has been observed on a number of phlox plants in ornamental plantings. The foliage has been almost entirely killed in a few instances.

OAK: The leaf blister caused by Taphrina coerulescens seems to be general. Specimens have been received from North Carolina and Florida, and reports from Georgia and Texas. According to Taubenhaus, a serious outbreak is very prevalent on post and scrub oak in Brazos County, Texas, and is causing premature defoliation. (June 25).

PINE: Rust (Cronartium cerebrum) occurred on long-leaf and loblolly pine below Waycross, Georgia. It produced knots on small trees and hypertrophied dead areas on trees up to 12 to 14 inches diameter. (J. H. Miller, June 22).

SPECIMENS RECEIVED

The following list includes some of the more interesting specimens received besides those already mentioned in various issues of the Reporter.

Exoascus mirabilis Atk. on Prunus angustifolia from Lexington, Kentucky, May 30; collected by E. M. Johnson, determined by Miss Anna E. Jenkins.

Exoascus pruni Fckl. on plum from Hargett, Kentucky, W. D. Valleau, May 27, det. A. E. Jenkins.

Gymnosporangium germinale (Schw.) Kern on Juniperus virginiana, from Independence, Montgomery County, Kansas, O. H. Elmer, April 30. Det. F. D. Kern. This does not seem to have been reported from Kansas previously.

Fumago vagans Pers. on Humulus lupulus (cult. hops), near Independence, Oregon, H. P. Barss, Sept. 25, 1930. Det. G. Hamilton Martin. The fungus causes "black mold" of the cones, lowering the grade and reducing profits.

Helicobasidium purpureum (Tul.) Pat., the perfect stage of the violet root rot fungus, Rhizoctonia crocorum, on Virguiera

helianthoides from Reed's Lake, Texas, collected by S. E. Wolff and Luther Powers, Jan. 22. Det. B. F. Dana, verified by J. A. Stevenson.

Peronospora cynoglossi (Burr.) Swingle on Cynoglossum virginianum, Davidsonville, Anne Arundel County, Maryland, R. J. Haskell, May 28. Det. J. A. Stevenson.

Sclerotinia fructicola (Wint.) Rehm causing twig blight on flowering almond in Ohio. Coll. E. W. Mendenhall, det. Paul Tilford.

Mosaic on garden peas from Massachusetts, O. C. Boyd, July 9.

Nematodes, including Aphelenchus sp., Aphelenchus avenae, Cephalobus oxyuroides, and Cephalobus persegnis, on a peony plant showing root knot symptoms sent in by E. W. Mendenhall from Ohio. The root knot nema, Caconema radicicola, was not found present. Aphelenchus avenae was exceedingly numerous in the injured part of the crown. Determined by G. Steiner.

Tylenchus dipsaci in narcissus from commercial narcissus fields in Jasper County, Missouri, I. T. Scott, Apr. 5. Det. G. Steiner. Aphelenchus sp. was also present.